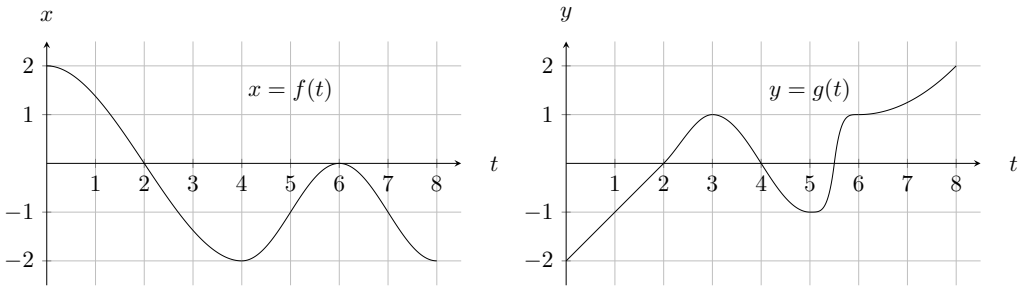
2. [13 points] To scare intruders off the island, Flora chases the intruders around. Her position at t minutes after she begins chasing the intruders is given by a parametric curve $(x, y) = (f(t), g(t))$. The graphs of $f(t)$ and $g(t)$ are given below, with x, y in km. For this question, "north" is the positive y-direction, and "east" is the positive x-direction.



a. [1 point] What is Flora's position at $t = 0$?

b. [2 points] For $0 \le t \le 8$, at which t-value(s) is Flora at (0,0)? If there is no such time, write "NONE".

c. [2 points] For $0 \le t \le 8$, at which t-value(s) is Flora going directly west (i.e. not in any northwest or southwest direction)? If there is no such time, write "NONE".

d. [2 points] For $0 \le t \le 8$, during which **t-interval(s)** is Flora going south? This includes any southeast and southwest directions, not only directly south. If there is no such time, write "NONE".

e. [2 points] For $0 \le t \le 8$, at which t-value(s) does Flora come to a stop? If there is no such time, write "NONE".

f. [4 points] Given that $f(1) = 4/3$, $f'(1) = -5/4$, and $g(t)$ is linear for $0 < t < 2$, find an equation for the tangent line to Flora's path at $t = 1$, given in Cartesian coordinates.